ABSTRACT

Background and objectives

The arterial cannulation is done for continuous invasive blood pressure monitoring of arterial blood gas sampling during major surgeries and intensive care units. The most commonly used site for cannulation is radial artery because of its accessibility during surgery and favourable anatomical landmarks.

Majority of the radial artery cannulation is done by palpation technique, but it is associated with increased failure rates and complications. In recent times, ultrasound provides a increased success rate and less number of complications during cannulation.

This study was conducted to identify the advantages of ultrasound over direct palpation technique in radial artery cannulation.

Methods

This study was performed on hundred (100) patients above eighteen (18) years of age posted for major neurosurgeries, cardiothoracic bypass and oncosurgeries.

The patients were randomly divided into two groups namely palpation group and ultrasound group, each containing fifty people.

Radial artery cannulation was performed on all the patients and the success rate of placement and associated complications were noted and analysed statistically.

Results

Both the groups were similar in age and sex. The parameters analysed were

- Successful cannulation at first attempt
- Successful cannulation at same radial artery
- Total number of attempts
- Time taken for successful cannulation
- Complications like

-Ischemia and vasospasm

-Hematoma

The successful first attempt was in 30 patients(60%) in the ultrasound group compared to the direct palpation group with 17 patients(34%),[p=0.015]. Successful cannulation at the same radial artery was in 46 patients(92%) in the ultrasound group compared to the direct palpation group with 38 patients(76%) [p=0.029] ,which were statistically significant.

The time to successful placement was similar in both groups and was not statistically significant (p = 0.435)

In addition to that the ultrasound group had lesser complications in 6 patients (12%) compared to 16 patients in the direct palpation group (32%) which was statistically significant (p =0.028)

In this study, both the groups were statistically compared with Fisher exact test, chi square test and paired- t-test.

Conclusion

This study shows that ultrasound guided radial artrery cannulation has increased efficacy and success rate and lesser complications compared to the traditional palpation technique.

Key Words: *Radial artery cannulation ; ultrasound; palpation technique*